Owner's Manual

Evolution Series

MC-8

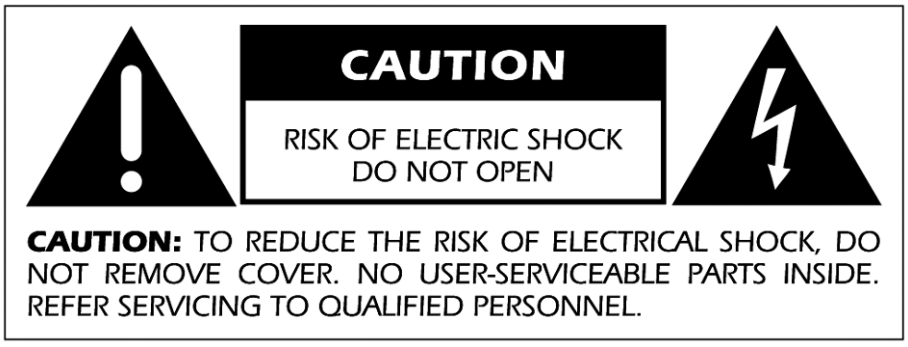
Reference Multi-Channel Power Amplifier

MOON

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with a dry cloth.
7. Do not block ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves or another apparatus that produces heat.
9. Do not defeat the safety purpose of the polarized or grounding type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for safety. If the provided plug does not fit into the outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched, particularly at plugs, convenience receptacles, and the point where they exit from the apparatus. Unplug mains cord during transportation.
11. Only use attachments and accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as when the power cord or plug has been damaged; liquid has been spilled or objects have fallen into the apparatus; or the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. No naked flame sources, such as candles, should be placed on the apparatus.

WARNING: TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.


CAUTION
RISK OF ELECTRIC SHOCK
DO NOT OPEN
CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER. NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED PERSONNEL.

Important Safety Instructions (cont'd)

The lightning flash with the arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

Marking by the "CE" symbol (shown left) indicates compliance of this device with the EMC (Electromagnetic Compatibility) and LVD (Low Voltage Directive) standards of the European Community

Please read all instructions and precautions carefully and completely before operating your Simaudio MOON MC-8 Multi-Channel Power Amplifier.

1. **ALWAYS** disconnect your entire system from the AC mains before connecting or disconnecting any cables, or when cleaning any component.
2. The MOON MC-8 must be terminated with a three-conductor AC mains power cord which includes a protective earthing connection. To prevent shock hazard, all three connections must **ALWAYS** be used. Connect the MOON MC-8 only to an AC source of the proper voltage; Both the shipping box and rear panel serial number label will indicate the correct voltage. Use of any other voltage will likely damage the unit and void the warranty
3. AC extension cords are **NOT** recommended for use with this product. The mains plug of the power supply cord shall remain readily accessible.
4. **NEVER** use flammable or combustible chemicals for cleaning audio components.
5. **NEVER** operate the MOON MC-8 with any covers removed. There are no user-serviceable parts inside. An open unit, especially if it is still connected to an AC source, presents a potentially lethal shock hazard. Refer all questions to authorized service personnel only.
6. **NEVER** wet the inside of the MOON MC-8 with any liquid. If a liquid substance does enter your MOON MC-8, immediately disconnect it from the AC mains and take it to your MOON dealer for a complete check-up.
7. **NEVER** expose the MOON MC-8 to dripping or splashing of liquids and no objects filled with liquids, such as vases, shall be placed on top.
8. **NEVER** block air flow through ventilation slots or heatsinks.
9. **NEVER** bypass any fuse.
10. **NEVER** replace any fuse with a value or type other than those specified
11. **NEVER** attempt to repair the MOON MC-8. If a problem occurs contact your MOON dealer.
12. **NEVER** expose the MOON MC -8 to extremely high or low temperatures.
13. **NEVER** operate the MOON MC -8 in an explosive atmosphere.
14. **ALWAYS** keep electrical equipment out of reach of children.
15. **ALWAYS** unplug sensitive electronic equipment during lightning storms.
16. **WARNING:** Do not expose batteries or battery pack to excessive heat such as sunshine, or fire or the like.

Table of Contents

Introduction 6

Unpacking 7

Installation & Placement 7

Rear Panel Layout 8

Connecting the MC-8 9

Balanced Operation 9

Operating the MC-8 10

Troubleshooting 10

Remote Operation 11

Specifications 12

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Date Code: 20140909

Introduction

Thank you for selecting the **MOON MC-8** Multi-Channel power amplifier as a part of your hi-fi reproduction system. This power amplifier has been designed to offer state-of-the-art high-end performance in an elegant package, while retaining all the sonic hallmarks on which Simaudio has made its reputation. We have spared no effort to ensure that it is the finest multi-channel amplifiers available. We have been building high-performance audio equipment for over 30 years, and the know-how gained through our cumulative experience is an important reason why **MOON** amplifiers are so musically satisfying.

Your new amplifier is configured for two (2) through seven (7) channels depending on the choice you made at the time of purchase. The number of channels can easily be changed "in the field" at any time. Please contact your authorized MOON dealer or distributor for further details. The performance of your **MC-8** will continue to improve during the first 300 hours of listening. This is the result of a "break-in" period required for the numerous high quality electronic parts used throughout this amplifier.

Before setting up your new **MOON MC-8**, we encourage you to please read this manual thoroughly to properly acquaint yourself with its features. We hope you enjoy listening to the **MOON MC-8** Mult-channel power amplifier as much as the pride we have taken in creating this fine audio product. We understand the power and emotion of music and build our products with the goal of faithfully capturing these elusive qualities.

The information contained in this manual is subject to change without notice. The most current version of this manual is available on our official website at http://www.simaudio.com

Your **MOON MC-8** Multi-Channel Amplifier incorporates many significant design features to achieve its "world class" level of performance. This is an abbreviated list of the more important features:

An **oversized** power supply employing a custom **proprietary toroidal transformer design** with lower magnetic, electrical and thermal loss, yielding an improved power transfer and lower regulation factor, resulting in increased current speed and better dynamics.

Modular circuit design using edge connectors for each channel's circuitry, allowing for upgrades "in the field".

Fully **balanced differential** circuitry up to the output stage.

Class A output to 5 watts for greater efficiency.

Extremely fast circuitry yielding **real-time amplification.**

Virtually non-existent transient intermodulation (TIM) distortion.

Proprietary MOON Bipolar Output transistors with unprecedented gain linearity resulting in improved bass response and even more accurate sonic reproduction

A **high damping factor** which yields superior musical dynamics, improved signal speed and refined timbre accuracy.

Extremely **rigid chassis construction** to minimize the effects of external vibrations.

Accurate matching of the very finest high quality electronic components in a **symmetrical** circuit design.

A **very short signal path** for a faster transient response.

Pure copper circuit board tracings with extremely low impedance characteristics.

A **12 Volt trigger** input for remote operations.

Designed to be **powered up at all times** for optimal performance.

Unpacking

The **MOON MC-8** power amplifier should be removed from its crate with care. We strongly advise that you seek another person to help lift the amplifier out of its box, and place it in its final location.

The following accessories should be included inside the box with your amplifier:

- ✓ *20A AC NEMA 6-20 power cable (USA and Canada only)*
- ✓ *This owner's manual*
- ✓ *Warranty and product registration information (USA and Canada only)*

Once the **MC-8** is unpacked, inspect it thoroughly and report any damage to your dealer immediately. We suggest that you keep all of the original packaging, storing it in a safe, dry place in case you're required to transport this product. The customized packaging is specially designed to protect the **MC-8** from any potential damage during transit.

Please write the serial number of your new **MOONMC-8** in the space provided below for future reference.

Serial No.: _____

Installation & Placement

The **MOON MC-8** Multi-Channel Amplifier is powerful and very heavy. It requires reasonable ventilation to maintain an optimum and consistent operating temperature, especially since it will radiate heat when driven hard. Consequently, it should be placed in a location with empty space around it for proper heat dissipation. You should never place another component on top of this amplifier. As well, the amplifier should be placed on a solid level surface. You should avoid placing it near a heat source or inside a closed cabinet that is not well ventilated as this could compromise the amplifier's performance and reliability. The **MC-8** uses a very large toroidal transformer in its power supply; even though it is well shielded, you should not place this amplifier too close to source components sensitive to EMI, such as turntables and phono preamplifiers.

When the amplifier reaches its normal operating temperature you may notice that, not only do the heat sinks become warm, the entire chassis idles at the same temperature. This is normal and intentional in the design of this amplifier: All the parts of the chassis are thermally inter-connected so that each channel reaches approximately the same temperature, even if some channels are driven harder than others. It also allows for previously unattainable sonic matching between channels by eliminating temperature discrepancies as a variable, which normally affects performance. Also, by reducing the average temperature it ensures a longer life for the internal components.

The **MC-8** is capable of delivering very high power output and its electrical consumption grows accordingly with its power output. The amplifier comes with a 20 ampere NEMA 6-20 power cord and corresponding 20A IEC connector on the back panel. The **MC-8 requires a 240V/20A AC connection that uses a NEMA 6-20 outlet.**

If you require an electrican to arrange for a dedicated 20A circuit for this amplifier, you must ensure that the outlet type is a **NEMA 6-20** and NOT a NEMA 5-20. With a dedicated 20A AC outlet, you will be able to take full advantage of the power potential of the **MOON MC-8** Multi-Channel power amplifier.

Rear Panel Layout

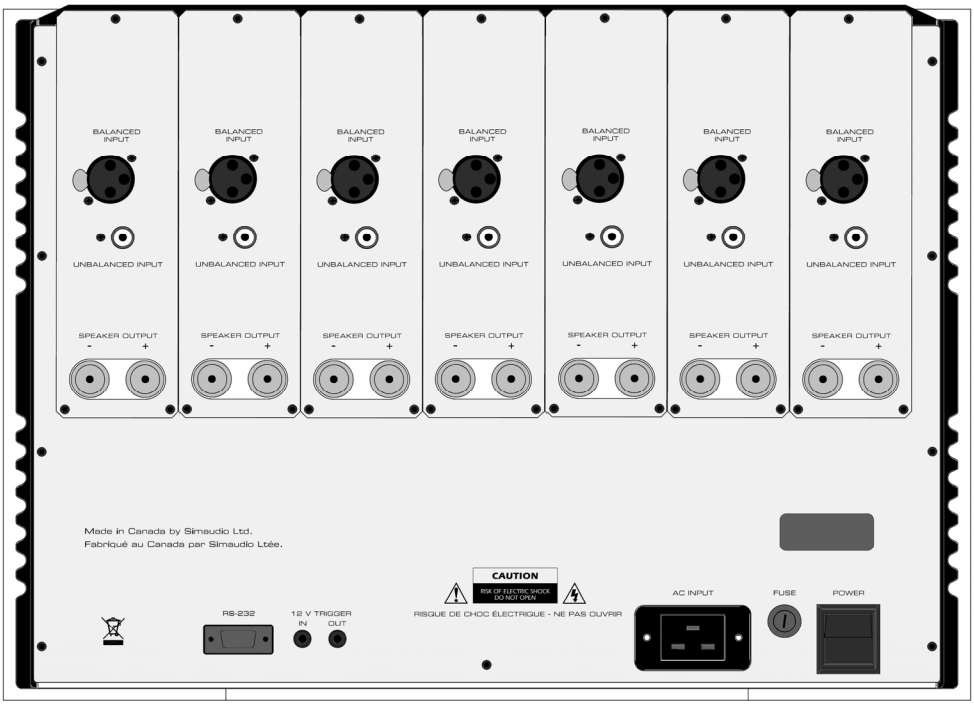

Figure 1: MOON MC-8 Rear panel

The rear panel will look similar to Figure 1 (above). Each channel has one balanced (differential) input on an XLR connector and one unbalanced (single-ended) input on a RCA connector. There is no switch to toggle from balanced mode to single-ended mode. You may operate the amplifier in either mode, but only one mode at one time for each channel. If you're using the balanced XLR inputs, **you must first remove the factory installed "dummy" XLR jumpers** (see figure 2 below) from the back panel XLR connectors and store them in a safe place. These jumpers are required ONLY when using the single-ended RCA inputs. If you decide to switch to single-ended input mode, you must reinstall the XLR jumpers (between pins 1 and 3) exactly as shown below :

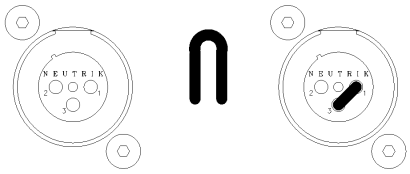

Figure 2: XLR connector without and with jumper accessory

The lower left section has an RS-232 input on a DB9 connector. To the right of this connector are two 12 Volt triggers, each on a 1/8" mini-jack; one input and one output, the latter for use in the event that wish you to "daisy chain" a second power amplifier on the same trigger circuit. The lower right section has from left to right; the 230V "AC Input" IEC receptacle for the power cord, the "AC Fuse" socket cover and the power "main switch".

Connecting the MC-8

Prior to making any connections or removing the XLR jumpers, the power amplifier must be turned off and the AC cable disconnected for at least 1 minute.

1. Connect the input cables running from your preamplifier's outputs, whether balanced or single-ended, to the amplifier' s XLR or RCA inputs, respectively. We highly recommend that you use the balanced XLR inputs (provided that your preamplifier has balanced outputs) to take full advantage of **MC-8** Power Amplifier's capabilities. Please refer to the next section, "Balanced Operation" on for further information.

   Do <u>not</u> connect cables to both the XLR and RCA inputs at the same time. Damage to both the MC-8 and the connected equipment can result that is not covered by warranty.

   Don't hesitate to use high quality interconnect cables*****. Poor quality interconnect cables can degrade the overall sonic performance of your system. It is recommended, though not mandatory, to use balanced interconnects between your preamplifier and the **MC-8** when using long cable runs (i.e. more than 3 meters in length).

2. Connect your speakers, with the cables of your choice, to the **MC-8**'s speaker binding posts. Take care to respect the polarity ("+" , "-") of the outputs. Once again, don't hesitate to use high quality speaker cables*****. Poor quality speaker cables can degrade the overall sonic performance of your system.

3. Connect the supplied AC power cable to the IEC receptacle, located on the amplifier's rear panel. Ensure that the AC wall outlet you use is a NEMA 6-20 with a functioning ground. For the best sonic performance, it is preferable that you plug your **MC-8** directly into this NEMA 6-20 AC outlet and avoid using an extension cord. In the event that you do not already have a NEMA 6-20 AC wall outlet in your listening room, we strongly recommend that you hire an electrician install one

***** Please speak with your MOON Authorized Retailer about the benefits of high quality cables for your system, and superior quality AC wall outlet.

Balanced Operation

When using an unbalanced interconnect, the audio signal runs through both the center wire and the shield/ground wire. Any noise picked up by this interconnect (ie. nearby magnetic fields such as an AC power cord) will be reproduced by the amplifier and heard through the loudspeakers. Conversely, a balanced interconnect has three separate conductors; one for the ground and two for the actual signal. These two signals are identical except that one is 180 degrees out of phase with the other. For example, when one conductor is carrying a signal of +5 Volts, the other will be carrying a signal of –5 Volts. When these two inverted signals on a balanced line are input into a differential power amplifier such as the **MOON MC-8**, any noise picked up by the interconnect will be eliminated since a differential circuit amplifies only the difference between these two signals: Noise on a balanced interconnect will be equal on both conductors and therefore cancel out.

Operating the MC-8

We recommend leaving your **MC-8** powered up at all times to maintain optimal performance. When you plan on being away for a few days, it may not be a bad idea to power off your amplifier. Please keep in mind that once fully "broken-in", your **MC-8** requires several hours of operation before reaching optimal performance after powering it up again.

Turning on your MOON MC-8 for the first time

Prior to turning the amplifier on for the first time, make sure that every cable is properly connected to avoid any problems. Then turn on your preamplifier connected to the **MC-8**. Flick the main rocker switch, located on the rear panel, labeled "POWER" to the '1' (on) position. The blue LED on the front panel will blink for up to 10 seconds while it achieves standby mode. When it stops blinking and is not illuminated, your **MC-8** is in standby mode. Next, briefly press the push button labeled "Standby" located on the front panel. You will hear a very faint click sound confirming that everything is in order. The blue LED on the front panel will illuminate, indicating that the**MC-8** is now powered up and ready for use.

On and Off Sequence

To avoid having any annoying noises (ie. "thumps" and "pops") emanate from your speakers when powering your **MC-8** on or off, you should always power up your preamplifier prior to powering up your **MC-8.** As well, always power down your **MC-8** prior to powering down your preamplifier.

Troubleshooting

Each red LED located on the front panel indicates the operational status of each channel of your **MOON MC-8**. When an red LED it begins flashing on and off during use, the circuitry is either over-heating or has detected the presence of DC in the input signal:

DC detection ..... LED blinks 2 times
Thermal Protection ..... LED blinks 3 times

Your **MOON MC-8** is a "smart" power amplifier equipped with a self-diagnostic system that will automatically shut down any or all channels when it detects DC (direct current) from any input. If your **MC-8** power amplifier turns off one or more channels or will not power up, there may very well be DC present in one (or more) of the amplifier's inputs coming from one (or more) of your preamplifier/processor's outputs or connected source components. You must determine if there is any DC present. The best way to accomplish this is by first powering down the **MC-8** via the main power rocker switch, then physically removing thel inputs to the **MC-8** leaving only the speakers connected. Attempt to power up your **MC-8** again: A successful power up will indicate the presence of DC coming from your preamplifier or one of your signal sources (ie. CD Player).

If your **MC-8** still doesn't power up, turn off the main power switch and check the AC fuse. If the fuse appears OK, put it back in its socket and then try to power up again the usual way. If the fuse is blown, replace it with a fuse of the same rating, and repeat the above process. At this point, you should be able to power up your **MC-8**. If not, immediately consult your dealer for assistance.

Remote Operation

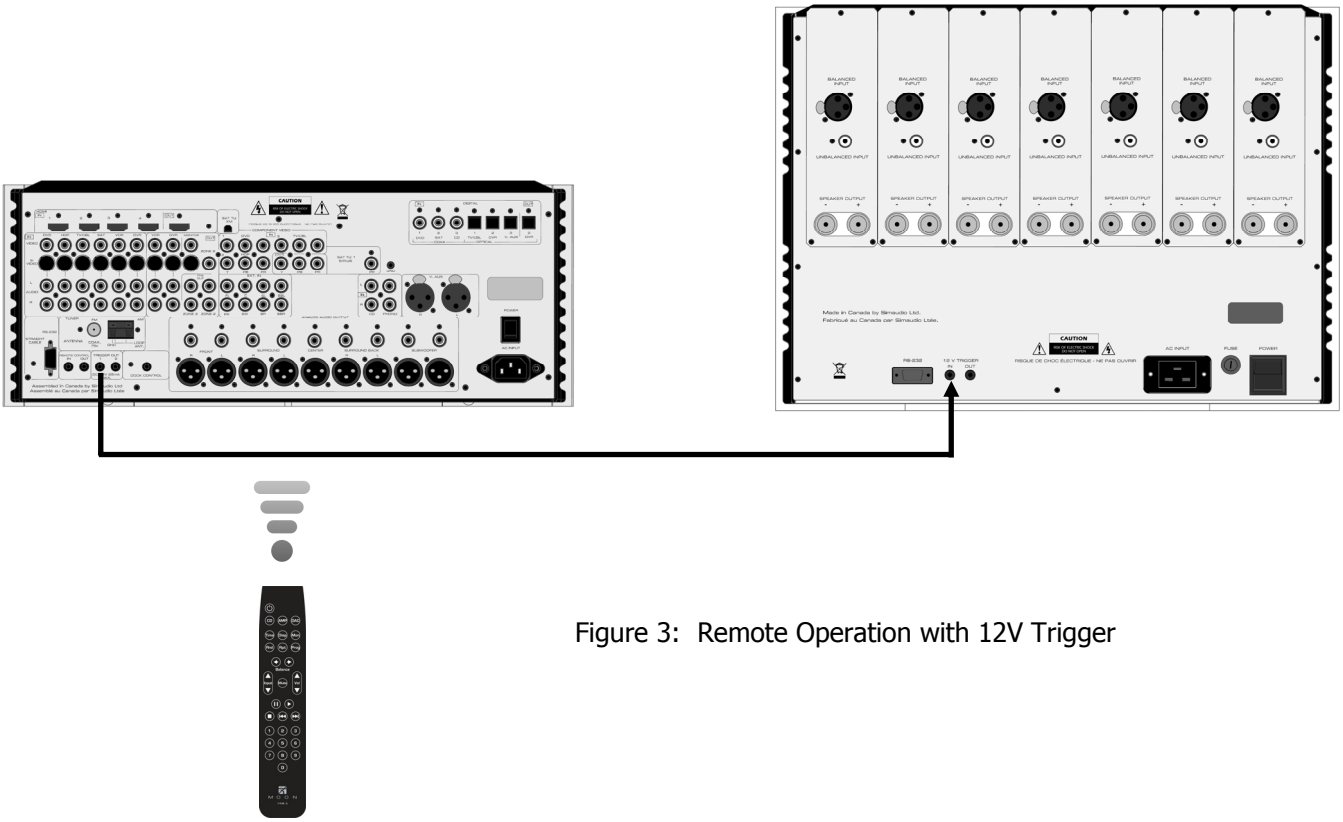

Figure 3: Remote Operation with 12V Trigger

In figure 3 we have a **CP-8** Multi-Channel Preamplifier/Processor and a **MC-8** amplifier connected together via their respective 12V triggers; The 12V trigger output on the **CP-8** is connected to the 12V trigger input on the top **MC-8** (using a 1/8" mini-jack cable). When you turn on the **CP-8** via remote control (or its Standby button), the **MC-8** will turn on automatically. The same rule applies when you put the **CP-8** into Standby mode.

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Specifications

Configuration	From 2 to 7 channels
Power Supply Transformers	3.0kVA
Power Supply Capacitance - base	216,000µF
Power Supply Capacitance - additional/channel	9,000µF
Class Of Operation	A/AB
Input Impedance	24,900Ω
Input Sensitivity	1420mV
Output Device Type	Bipolars - 8 per channel
Power Output at 8Ω / 4Ω (any channel)	250 Watts / 500 Watts
Frequency Response	10Hz - 100kHz +0/-3dB
Output Impedance	0.01Ω
Damping Factor (static)	800
Gain	29dB
Signal-to-noise Ratio	> 105dB @ full power
Slew Rate	80V/µs
Maximum Current – Peak / Continuous	40 amperes / 20 amperes
Crosstalk @ 1kHz	-90dB
Intermodulation Distortion	Unmeasureable
THD (20Hz - 20kHz) @ 1 watt / 250 watts	< 0.02 % / < 0.05 %
Power Consumption @ idle	85 Watts
AC Power Requirements	230V / 60Hz or 240V / 50Hz
Dimensions (W x H x D, inches)	17.4 x 13.4 x 21

Balanced Input Pin Assignment:

	Pin 1	Ground
	Pin 2	Positive
	Pin 3	Negative

12 Volt Trigger:	Logic	Direct (0V off, 12V on)
	Connector	1/8” mini-jack
	Input Impedance	1kΩ
	Current Consumption	12mA

Net weight:	Basic Unit	170 lbs. / 76 kgs.
	Each additional channel	4 lbs. / 2 kgs.
	Shipping Weight	240 lbs. / 108 kgs.

NOTE: If you require the RS-232 codes for your **MC-8**, please visit the "Contact Us" page and complete the "Information request" form on our website at www.simaudio.com.

Fuse Replacement: Use a 10A Long Fast blow (3AG size).